



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/712,458   | 11/13/2003  | Wolf-Dieter Franz    | 5455-2PCIP          | 9314             |
| 27799  | 7590        | 02/22/2006           | EXAMINER            |                  |
| COHEN, PONTANI, LIEBERMAN & PAVANE<br>551 FIFTH AVENUE<br>SUITE 1210<br>NEW YORK, NY 10176 |             |                      | WONG, EDNA          |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 1753                |                  |

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |   |  |
|------------------------------|--------------------------------------|---|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/712,458 | <b>Applicant(s)</b><br>FRANZ, WOLF-DIETER |  |
|                              | <b>Examiner</b><br>Edna Wong         | <b>Art Unit</b><br>1753                   |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 January 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>January 30, 2006</u> . | 6) <input type="checkbox"/> Other: _____  |

This is in response to the Amendment dated January 20, 2006. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Response to Arguments***

#### **Claim Objections**

Claims **7-8 and 13** have been objected to because of minor informalities.

The objection of claims 7-8 and 13 has been withdrawn in view of Applicants' amendment.

#### **Claim Rejections - 35 USC § 112**

Claims **1-15** have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The rejection of claims 1-15 under 35 U.S.C. 112, second paragraph, has been withdrawn in view of Applicants' amendment.

#### **Claim Rejections - 35 USC § 102**

Claim **1** has been rejected under 35 U.S.C. 102(b) as being anticipated by **Herwig** (US Patent No. 2,547,120).

The rejection of claim 1 under 35 U.S.C. 102(b) as being anticipated by Herwig

has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 103

I. Claims **5-11 and 14-15** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Herwig** (US Patent No. 2,547,120) as applied to claim 1 above.

The rejection of claims 5-11 and 14-15 under 35 U.S.C. 103(a) as being unpatentable over Herwig as applied to claim 1 above has been withdrawn in view of Applicants' amendment.

II. Claims **12 and 13** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Herwig** (US Patent No. 2,547,120) as applied to claim 1 above, and further in view of **DE 35 39 318** ('318).

The rejection of claims 12 and 13 under 35 U.S.C. 103(a) as being unpatentable over Herwig as applied to claim 1 above, and further in view of DE 35 39 318 ('318) has been withdrawn in view of Applicants' amendment.

Allowable Subject Matter

The indicated allowability of claims 2-4 is withdrawn in view of the new grounds of rejection. Rejections based on the new grounds follow.

***Response to Amendment***

***Claim Objections***

Claim 10 is objected to because of the following informalities:

Claim 10

line 3, the word -- of -- should be inserted after the word "range".

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

Claims 1, 3-7 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1

line 5, "said metal" lacks antecedent basis.

Claim 3

line 3, "said Pd coating" lacks antecedent basis.

Claim 16

line 4, "said metal" lacks antecedent basis.

Claim 17

line 4, "said metal" lacks antecedent basis.

Claim 19

line 5, "said metal" lacks antecedent basis.

***Claim Rejections - 35 USC § 103***

I. Claims **1, 5-11 and 14-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 60-208495** ('495) in combination with **JP 30-27175** ('175) and **DE 2,204,156** ('156).

JP teaches a method of applying a metal coating (= Co, Cu or Ni) [page 3, bottom right column] to carbon fibers (abstract) comprising:

(a) etching said carbon fibers in an alkaline etchant (= a soft etching treatment by a caustic alkali) [abstract];

(b) Pd seeding said carbon fibers (= to form a thin palladium thin) [abstract]; and then

(c) electroplating said carbon fibers with said metal (abstract; page 4, bottom right column (Ni); and page 2 (Cu)).

Between said etching and said electroplating no ultrasound treatment is implemented.

The electroplating involves at least one of the following group: Ag, Cu, Ni and Sn

(= Cu and Ni) [page 3, bottom right column; page 4, bottom right column (Ni); and page 2 (Cu)].

The electroplating utilizes a current density in the range of 0.1 to 10 A/dm<sup>2</sup> (= 2 A/dm<sup>2</sup> or 5 A/dm<sup>2</sup>) [page 4, bottom right; and page 2].

The etching is done in a solution of NaOH and/or KOH (= a caustic alkali) [abstract].

The method of JP '495 differs from the instant invention because JP '495 does not disclose the following:

- a. Wherein the carbon fibers are graphite, as recited in claim 1.

Like JP '495, JP '175 teaches pre-treating carbon fibers (abstract). JP '175 teaches etching by anodizing the surface of carbonized or graphitized carbon fibers in an electrolyte solution of 2-4 N LiOH, NaOH or KOH at 50-70°C at a current density in the range of 0.1-1 mA/dm<sup>2</sup>. Thus, carbon fibers are manufactured having high orientation and tensile strength (abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the carbon fibers described by JP '495 with wherein carbon fibers are graphite because anodizing the surface of carbonized or graphitized carbon fibers would have provided carbon fibers with high orientation and tensile strength as taught by JP '175 (abstract).

b. Wherein the etching is anodic etching, as recited in claim 1.

JP '495 teaches a soft etching treatment by a caustic alkali (abstract).

JP '175 teaches etching by anodizing in an electrolyte solution of 2-4 N LiOH, NaOH or KOH (abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the etching described by JP '495 with wherein the etching is anodic etching because this would have been doing the same endeavor as taught by JP '175 (abstract).

c. Between said anodic etching and a subsequent step: directly transferring said graphite, obtained with said anodic etching step, into water or a weak aqueous solution, as recited in claim 5.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method described by JP '495 by directly transferring said graphite, obtained with said anodic etching step, into water or a weak aqueous solution because rinsing or washing the product with water would have prevented any residual solution on the graphite to carry over into the electroplating bath.

The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by the Applicants. *In re Linter* 458 F.2d 1013, 173 USPQ 560 (CCPA



1972); *In re Dillon* 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990), *cert. denied*, 500 US 904 (1991); and MPEP § 2144.

d.       Wherein a current duration in said electroplating is in the range of 5 to 90 minutes, as recited in claim 9.

JP '495 teaches electroplating Co, Cu or Ni (page 3, bottom right column; page 4, bottom right column (Ni); and page 2 (Cu)). The electroplating inherently has a current duration.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the current duration described by JP '495 with wherein a current duration in said electroplating is in the range of 5 to 90 minutes because the current duration is a result-effective variable and one skilled in the art has the skill to calculate the current duration that would have determined the success of the desired reaction to occur, e.g., thickness of the metal coating, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(II)(B).

A current duration in the range of 5 to 90 minutes appears to be a mere optimization which solves no stated problems and produces no unexpected results, unless proven otherwise.

e.       Wherein the solution of at least one of NaOH and KOH has a concentration in the range 10 to 70% by weight, as recited in claim 10.

JP '175 teaches an electrolyte solution of 2-4 N LiOH, NaOH or KOH (abstract).

Furthermore, like JP'495 and JP '175, DE '156 teaches pre-treating carbon fibers (abstract). DE teaches anodizing a 10,000 filament, 48-thread carbon cable in 10-20% sodium hydroxide at 1 A/thread, 6V and 30.48 m/hr (abstract).

f.       Wherein said anodic etching is done at a temperature in the range 20°C to 70°C, as recited in claim 11.

JP '175 teaches that the anodic etching is done at a temperature in the range of 50-70°C (abstract).

g.       Wherein said anodic etching is performed with an applied electrical potential in the range of 4V to 20V, as recited in claim 14.

JP '175 teaches a current density in the range of 0.1-1 mA/dm<sup>2</sup> (abstract). The anodic etching inherently has an applied electrical potential.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the anodic etching described by JP '175 with wherein said anodic etching is performed with an applied electrical potential in the range of 4V to 20V because the applied electrical potential is a result-effective variable and one skilled in the art has the skill to calculate the applied electrical potential that would have determined the success of the desired reaction to occur, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(II)(B).

The range of 4V to 20V appears to be a mere optimization which solves no stated problems and produces no unexpected results, unless proven otherwise.

Furthermore, like JP'495 and JP '175, DE '156 teaches pre-treating carbon fibers (abstract). DE teaches a 10,000 filament, 48-thread carbon cable was anodized in 10-20% sodium hydroxide at 1 A/thread, 6V and 30.48 m/hr (abstract).

h. Wherein said anodic etching has a duration in the range of 5 to 90 minutes, with the actual duration being inversely proportional to the applied electrical potential, as recited in claim 15.

DE teaches a 10,000 filament, 48-thread carbon cable was anodized in 10-20% sodium hydroxide at 1 A/thread, 6V and 30.48 m/hr (abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the anodic etching described by JP '175 with wherein said anodic etching has a duration in the range of 5 to 90 minutes, with the actual duration being inversely proportional to the applied electrical potential because the duration of the anodic etching is a result-effective variable and one skilled in the art has the skill to calculate the duration that would have determined the success of the desired reaction to occur, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(II)(B).

A duration in the range of 5 to 90 minutes, with the actual duration being inversely proportional to the applied electrical potential appears to be a mere

optimization which solves no stated problems and produces no unexpected results, unless proven otherwise.

II. Claims **3 and 4** are rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 60-208495** ('495) in combination with **JP 30-27175** ('175) and **DE 2,204,156** ('156) as applied to claims 1, 5-11 and 14-15 above, and further in view of **Holdermann et al.** (US Patent No. 5,591,565).

JP '495, JP '175 and DE '156 are as applied above and incorporated herein.

The method of JP '495, JP '175 and DE '156 differs from the instant invention because they do not disclose the following:

- a. Wherein between said Pd seeding and said electroplating: electroless plating said graphite to reinforce said Pd coating, as recited in claim 3.
- b. Wherein at least Ni or Cu is deposited in said electroless plating step, as recited in claim 4.

Holdermann teaches reinforcing a palladium nucleation layer by chemical deposition of a nickel layer having a thickness of from 1 to 5  $\mu\text{m}$  and subsequently by electroless deposition of a copper layer having a thickness of from 5 to 20  $\mu\text{m}$  (col. 2, lines 37-44).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method described by JP '495 with wherein between said Pd seeding and said electroplating: electroless plating said graphite to

reinforce said Pd coating; and wherein at least Ni or Cu is deposited in said electroless plating step because it is conventional to use a chemically deposited nickel layer and a subsequently electroless deposited copper layer to reinforce a thin palladium layer or a layer of individual palladium nuclei as taught by Holdermann (col. 2, lines 37-44).

Furthermore, when plating a palladium layer, one having ordinary skill in the art would have known about reinforcing the palladium layer because the artisan would not have wanted the palladium particles to fall out of the layer.

**III.** Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 60-208495** ('495) in combination with **JP 30-27175** ('175) and **DE 2,204,156** ('156) as applied to claims 1, 5-11 and 14-15 above, and further in view of **DE 35 39 318** ('318).

JP '495, JP '175 and DE '156 are as applied above and incorporated herein.

The method of JP '495, JP '175 and DE '156 differs from the instant invention because they do not disclose wherein said graphite comprises graphite particles bound by plastics, as recited in claim 12.

DE '318 teaches resistors comprising a film made of plastic admixed with electrically conductive particles such as soot, graphite and/or metal (abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method described by JP '495 with wherein said graphite comprises graphite particles bound by plastics because products such as resistors would have been conventionally comprised of graphite particles bound by

plastics as taught by DE '318 (abstract).

**IV.** Claim **13** is rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 60-208495** ('495) in combination with **JP 30-27175** ('175) and **DE 2,204,156** ('156) as applied to claims 1, 5-11 and 14-15 above, and further in view of **DE 35 39 318** ('318).

JP '495, JP '175 and DE '156 are as applied above and incorporated herein.

The method of JP '495, JP '175 and DE '156 differs from the instant invention because they do not disclose applying a solder pad to said metal coating as thus produced, as recited in claim 13.

DE '318 teaches applying terminals made of solderable material to individual resistors (abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method described by JP '495 by applying a solder pad to said metal coating as thus produced because products such as resistors would have been conventionally comprised of solderable material which would have allowed electrical components to be attached to the resistor.

Furthermore, it has been held that the selection of a known material based on its suitability for its intended use supports a prima facie obviousness determination. MPEP § 2144.07.

**V.** Claim **16** is rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 60-**

**208495 ('495)** in combination with **JP 30-27175 ('175)** and **DE 2,204,156 ('156)**.

JP '495, JP '175 and DE '156 are as applied for reasons discussed above and incorporated herein.

**VI.** Claim **17** is rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 60-208495 ('495)** in combination with **JP 30-27175 ('175)** and **DE 2,204,156 ('156)**.

JP '495, JP '175 and DE '156 are as applied for reasons discussed above and incorporated herein.

**VII.** Claim **18** is rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 60-208495 ('495)** in combination with **JP 30-27175 ('175)**, **DE 2,204,156 ('156)** and **DE 35 39 318 ('318)**.

JP '495, JP '175, DE '156 and DE '318 are as applied for reasons discussed above and incorporated herein.

**VIII.** Claim **19** is rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 60-208495 ('495)** in combination with **JP 30-27175 ('175)** and **DE 2,204,156 ('156)**.

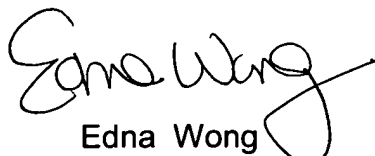
JP '495, JP '175 and DE '156 are as applied for reasons discussed above and incorporated herein.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Edna Wong  
Primary Examiner  
Art Unit 1753

EW  
February 19, 2006